

REMARKS

In the Office Action of July 29, 2003, claims 1-15 stand rejected. By this amendment and reply, claims 1, 6 and 14 are amended. Claim 11 has been canceled. Reconsideration and allowance of all pending claims are respectfully requested in view of the following remarks. No new subject matter is being added by this Amendment.

IN THE CLAIMS

I. CLAIM REJECTIONS.

A. 35 U.S.C. §112 Rejection.

Claims 1-15 stand rejected under 35 U.S.C. §112, first paragraph as nonenabled. Specifically, the Examiner argues that the claimed non-electrically conductive single ion layer is contradictory. The Examiner suggested that the use of the phrase “non-electronically conductive” single ion layer. Claims 1, 6 and 14 have been amended to recite a “non-electronically conductive single ion layer”.

Claims 1-15 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner argues that the specification fails to teach a non-electrically conductive single ion layer.

Claims 1, 6 and 14 have been amended to recite a “non-electronically conductive single ion layer”.

B. 35 U.S.C. § 102(b) Rejection.

Claims 14 and 15 stand rejected under 35 U.S.C. 102 (b) as anticipated by U.S. Patent No. 3,824,434 to Kawakami (“Kawakami”). The Examiner argues that Kawakami discloses a multi-layer structure comprised of three or more layers where at least one layer comprises a single ion conducting layer and one comprises a polymer layer. Specifically, the Examiner asserts that the conductor layer, semi-conductor layer and the insulating layer of the Kawakami patent are the three layer structure of the present invention and that each of these layers conduct lithium ions and thus are single ion conducting layers. The Examiner also argues that the

insulating of the Kawakami patent is the polymer layer. Further, the Examiner argues that the insulating layer is non-electronically conductive because it conducts ions but not electrons. Applicants respectfully traverse.

In order to sustain a rejection under 35 U.S.C. § 102(b), each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 528, 631 (Fed. Cir. 1987). Indeed, “the identical invention must be shown in as complete detail as is contained in the.... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1235 (Fed. Cir. 1987). Because the claims of the present invention contain elements not found in *Kawakami*, this rejection must fail.

Claim 14, as amended, recited in part “wherein at least one of said three or more layers comprises a non-electronically conductive single ion conducting layer and at least another one of said three or more layers comprises a polymer layer.” Therefore, claim 14, as amended, requires that at least one of the layers in the multi-layer structure be a non-electronically conductive single ion conducting layer and another layer of the at least one of layers be a polymer layer. In *Kawakami*, the insulating layer is both the polymer layer and the non-electronically conductive single ion layer. Thus, *Kawakami* fails to teach or disclose at least one layer being a non-electronically conductive single ion-conducting layer and at least another layer being a polymer layer. At most *Kawakami* teaches a single layer having these characteristics. Therefore, claim 14 is in condition for allowance.

C. 35 U.S.C. § 103 Rejections.

To establish a prima facie case of obviousness under 35 U.S.C. § 103, three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. 2143.

1. Kawakami in view of Skotheim.

Claims 1, 3, 4, 5, 10 and 12 stand rejected under 35 U.S.C. 103(c) as being unpatentable over Kawakami in view of U.S. Patent No. 5,529,860 to Skotheim. Applicants respectfully traverse this rejection.

Considering claim 1, the Examiner argues that Kawakami discloses all the limitations of claim 1 except for an electroactive sulfur containing cathode, which, the Examiner asserts, can be found in Skotheim.

As discussed previously, Kawakami fails to disclose, teach or suggest that in the multi-layer structure at least one layer is a non-electronically conductive single ion conducting layer and another layer of the at least one layer is a polymer layer. The conductor layer and the semiconductor layer of Kawakami are electronically conductive layers and not polymer layers. While the insulating layer may be both a polymer layer and a non-electronically conductive single ion layer, it is one layer and not two or more layers. Thus, Kawakami fails to disclose teach or suggest “wherein at least one of said three or more layers comprises a non-electronically conductive single ion conducting layer and at least another one of said three or more layers comprises a polymer layer”, as found in claim 1 as amended. The addition of Skotheim does not solve the shortcomings of the Kawakami patent. Therefore, claim 1 is in condition for allowance.

Also, claim 1 has been amended to recite the limitations of claim 11. While claim 11 was previously rejected in the office action of January 29, 2003 under 35 U.S.C. §103 as unpatentable over Kawakami in view of Skotheim and further in view of Japanese patent ‘357. Applicant, in the response of May 29, 2003, argued the proposed combination failed to teach, disclose or suggest all the limitations of claim 11. This argument was not responded to in this office action. Applicant assumes claim 11 would be patentable if rewritten in independent form and including all the limitations of intervening claims. Therefore a combination of claim 1 and claim 11 is patentable. If the Examiner provides a §103 rejection for claim 11 in the next office action or advisory action, the Applicant requests the finality of this office actions be removed since the Applicant was not given a chance to respond to that argument in this response, and to issue a non-final office action. Further, neither Kawakami nor Skotheim, either by themselves or in combination, teach or suggest an electrochemical cell including a first anode active layer

wherein “said first anode active layer further comprises an intermediate layer selected from the group consisting of temporary protective metal layers and plasma CO₂ treatment layers, wherein said intermediate layer is interposed between said first anode active layer and said multi-layered structure”, as disclosed in amended claim 1. Therefore, for these reasons, claim 1 is allowable.

Claims 3, 4, 5, 10 and 12 are all dependent on allowable claim 1. Therefore, claims 3, 4, 10 and 12 are allowable.

2. Kawakami in view of Skotheim in view of Bates.

Claim 2 stands rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. patent No. 5,569,520 to Bates (“Bates”).

Claim 2 depends from allowable claim 1, therefore claim 2 is allowable.

3. Kawakami in view of Skotheim in view of Bates II.

Claims 7 and 8 stand rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. Patent No. 5,3114,765 to Bates (Bates II).

Claim 7 discloses that the single ion conducting layer comprises glass selected from a group of glasses and claim 8 discloses that the glass is lithium phosphorus nitride. The Examiner claims that Bates II teaches that single ion conducting layers (including LiPON) can be used as a barrier layer applied to the anode and that the barrier of Bates II can be added to the teachings of Kawakami and Skotheim. The Examiner states “Therefore it would have been obvious to modify the teachings of Bates ‘765 by providing a protective layer....” This seems to state that, in addition to the layered structures of Kawakami and Skotheim, an additional coating as taught by Bates II can be added. However, in this office action the Examiner explains that the layer in Bates II would be substituted for one of the layers as disclosed by Kawakami (the insulator type). Because the addition of a coating as disclosed by Bates II would change the operation of Kawakami, the combination is illegitimate and should be withdrawn.

Both Bates II and Kawakami are drawn to methods of defeating dendrite growth in a lithium anode cell. Bates II accomplishes this by a protective layer on the anode (Col 2, lines 4-19) and Kawakami relies on the conductor or semi-conductor layer (Col. 24, lines 11-25 and lines 42-50). If the combination was made, and the protective layer of Bates II was added to the

Kawakami multi layer structure, than the protective layer of Bates II would stop the dendrite formation first, rendering the conductor and semi-conductor layers superfluous. The principle of operation of the Kawakami reference would change from using a semiconductor/conductor layer to stop dendrite growth to stopping dendrite formation using the coating of Bates. Because the proposed combination would change the principle of operation of the Kawakami reference, there is no motivation to make the proposed combination. MPEP 2143.01. Therefore claim 7 and 8 are allowable.

Additionally, claims 7 and 8 depend from allowable claim 1. Therefore, claims 7 and 8 are allowable.

4. Kawakami in view of Skotheim in view of Ying.

Claim 9 stands rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. Patent No. 6,277,514 to Ying.

Claim 9 depends from allowable claim 1. Therefore, claim 9 is allowable.

5. Kawakami in view of Skotheim in view of Koksang.

Claim 13 stands rejected as unpatentable over Kawakami in view of Skotheim and in further view of U.S. Patent No. 5,387,479 to Koksang.

Claim 13 depends from allowable claim 1; therefore claim 13 is allowable.

C. Double patenting.

Claims 1, 2, 5-8 and 10-15 stand provisionally rejected under the judicially created doctrine of obviousness- type double patenting as being unpatentable over claims 1, 9, 11, 37, 38, 43, 45-50 and 57 of co-pending application No. 09/721,519. A terminal disclaimer is submitted with this response.

Claims 14 and 15 stand provisionally rejected under the judicially created doctrine of obviousness- type double patenting as being unpatentable over claim 1 and 6 of copending application No. 09/864,890. A terminal disclosure is submitted with this response.

D. Claims 6 and 11.

Claims 6 and 11 were rejected under §112 and for double patenting. This office action did not provide a §102 or §103 rejection. Therefore, once the §112 rejection is overcome and terminal disclaimer provided, claim 6 should be allowable (or at least objected to and not rejected). Claim 11 also would be allowable (or objected to); however, claim 11 has been incorporated into claim 1. This makes claim 1 allowable. If the Examiner argues a §102 or §103 rejection for these claims in the next action, the Applicant asks that the finality of this office action be removed and the next action be non-final to give the applicant a chance to properly respond.

IV. CONCLUSION

For the foregoing reasons, the Application is believed to be in condition for allowance and favorable action is respectfully requested. The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

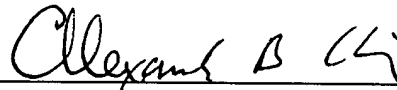
While no other fees are believed due, applicants hereby request that any other required fee to maintain pendency of this case, except for the Issue Fee, be charged to Deposit Account No. 19-3878.

Respectfully submitted,

October 17, 2003

Date

By



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